

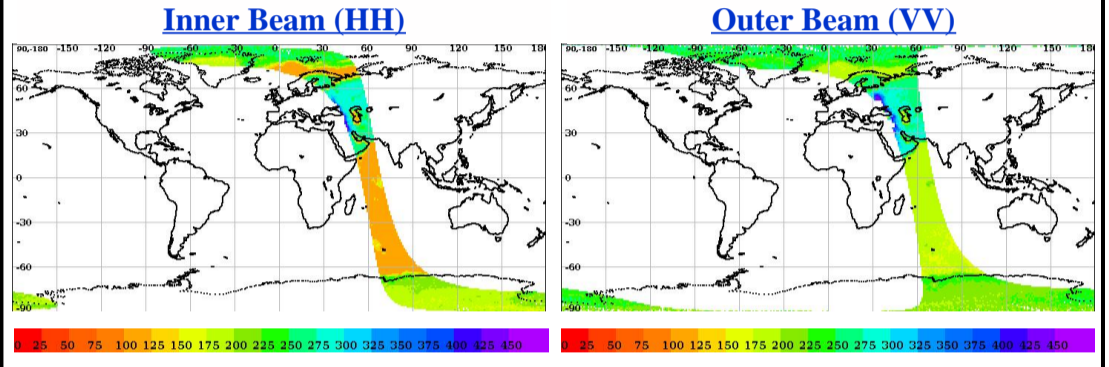
# SCATSAT-1 Scatterometer Level-1B Data Quality Evaluation Report

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- Half Orbit OAT Behaviour

<b>Satellite Id</b>	ScatSat-1	<b>Start Orbit</b>	19088	<b>Total Scans</b>	1017
<b>Sensor Name</b>	Scatterometer	<b>End Orbit</b>	19089	<b>No of Inner FootPrints</b>	281
<b>Processor Version</b>	v1.1.4	<b>Rev. Number</b>	19088_19089	<b>No Of Outer FootPrints</b>	282
<b>Half Orbit Direction</b>	SN	<b>Data Production Date</b>	04-05-2020	<b>No. Of Inner Slices</b>	9
<b>Equator Crossing Date</b>	04-05-2020	<b>Equator Crossing Time</b>	16:11:49.000	<b>No Of Outer Slices</b>	15

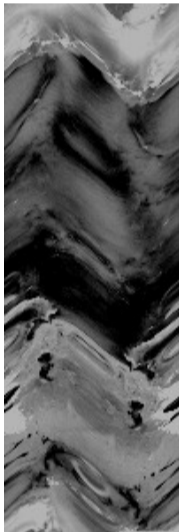
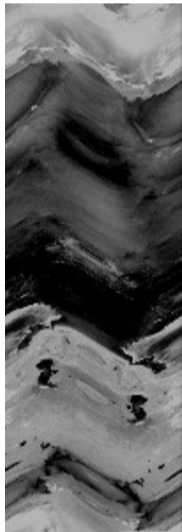
## Brightness Temperature(k) Footprint trace



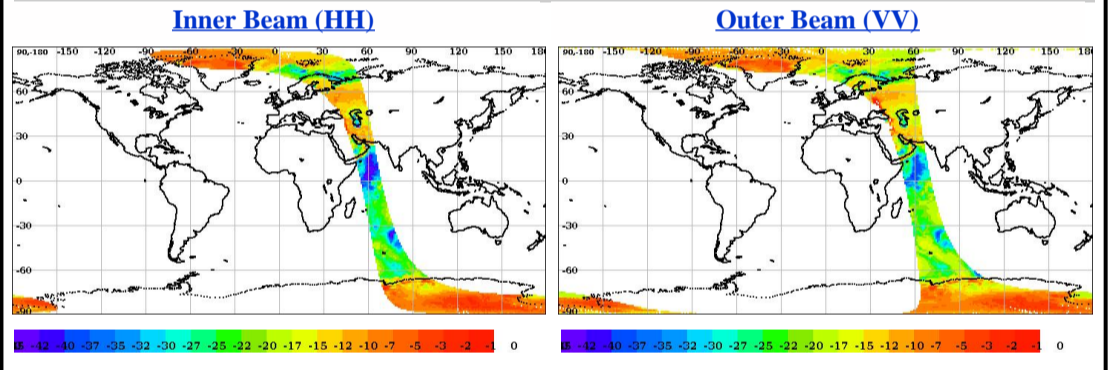
## Image Snapshot for Inner & Outer Beam

Inner (HH)

Outer (VV)



## Sigma0(dB) Footprint trace



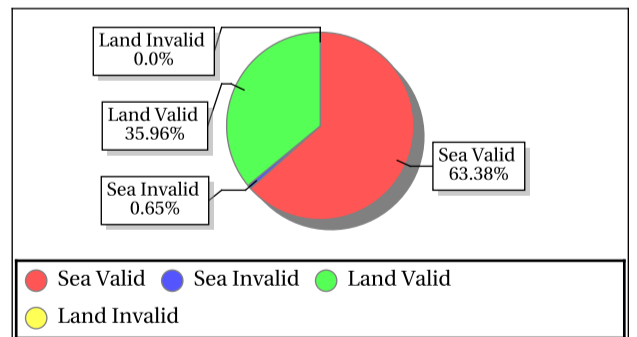
## Invalid and Poor Sigma-0 Quality Flag Statistics for Inner/Outer Slices\*

Sigma-0 Flags	Inner Beam	Outer Beam
Invalid Sigma0(%)	0.18	1.06
Data Not Available From Payload (%)	18.67061	3.236388
Slice not within sample array limits (%)	81.33	96.76
C(S+N) - C(N) < 0.1 (%)	0.00	0.00
Poor Sigma0(%)	27.06	18.96
Noise samples for blending Saturated	22.93599	34.07248
Count samp. for interpol. saturated (%)	0.00	0.00
Sigma0<lower bound (-96dB) (%)	0.0	0.0
Sigma0>upper bound (0 dB) (%)	0.00	0.00
SNR <-65 dB (%)	0.041951	0.072476

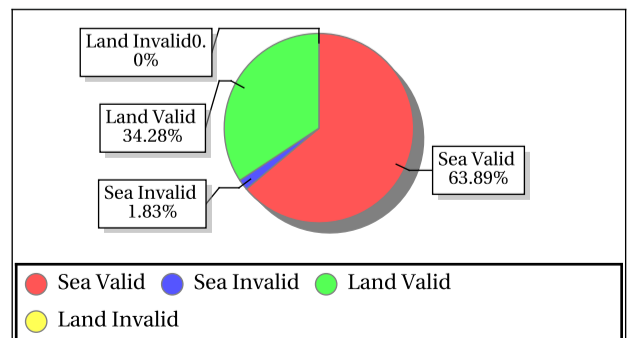
\*DP Format Document

## Sigma-0 Quality Flag Statistics for Inner/Outer Footprints

### Inner Beam (HH)



### Outer Beam (VV)



## Invariant Site Sigma-0 Statistics for Ascending/Descending, Fore/Aft in HH/VV beams

Site Name	Center Lat	Center Lon	Beam	Node	ScanDir	Sigma0 Min	Sigma0 Max	Sigma0 Mean	Sigma0 Std	BT Min	BT Max	BT Mean	BT Std
ANT_1	-75.00	121.00	Inner	ASC	Aft	-8.01	-5.78	-6.96	0.61	159.40	197.36	180.47	12.05
ANT_1	-75.00	121.00	Inner	ASC	Fore	-8.36	-6.30	-7.09	0.59	153.43	205.60	184.69	14.40
GreenLand_2	77.50	-41.50	Inner	ASC	Fore	-5.68	-4.04	-5.06	0.52	157.34	189.86	173.66	10.17
ANT_1	-75.00	121.00	Outer	ASC	Aft	-9.05	-7.14	-8.31	0.61	192.72	245.57	222.47	16.85
ANT_1	-75.00	121.00	Outer	ASC	Fore	-9.34	-7.56	-8.57	0.64	174.19	207.71	198.36	9.84
GreenLand_2	77.50	-41.50	Outer	ASC	Fore	-5.61	-4.13	-5.11	0.50	238.58	269.25	249.08	9.87
GreenLand_1	74.69	-42.50	Outer	ASC	Fore	-10.50	-7.44	-9.01	0.77	231.68	324.78	256.70	24.78



## Overall statistics for the Static Parameters (Footprint-wise)

Inner Beam (HH)																
	Sea Aft				Sea Fore				Land Aft				Land fore			
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)
<b>Kp</b>	0.12	296.07	0.54	5.950	0.12	287.39	0.44	5.011	0.12	14.44	0.12	0.039	0.12	191.93	0.13	0.045
<b>Kpa</b>	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000	0.01	0.02	0.01	0.000
<b>Kpb</b>	0.02	0.02	0.02	0.000	0.02	0.02	0.02	0.000	0.02	0.02	0.02	0.000	0.02	0.02	0.02	0.000
<b>Kpc</b>	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>SNR</b>	-34.85	27.68	3.40	0.042	-34.72	28.98	4.51	0.102	-21.71	29.12	17.65	16.826	-32.97	29.19	17.97	16.984

Outer Beam (VV)																
	Sea Aft				Sea Fore				Land Aft				Land fore			
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)
<b>Kp</b>	0.09	221.77	0.42	4.399	0.09	231.20	0.38	3.802	0.09	43.44	0.10	0.143	0.09	19.82	0.10	0.171
<b>Kpa</b>	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>Kpb</b>	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>Kpc</b>	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000	0.01	0.01	0.01	0.000
<b>SNR</b>	-34.76	21.97	1.60	0.000	-34.94	21.83	2.23	0.000	-27.68	23.30	11.79	0.056	-24.26	23.15	11.60	0.143

Parameter Specifications					
Parameter	Kp	Kpa	Kpb	Kpc	SNR
Min	0.00	0.00	0.00	0.00	-65.00
Max	1.00	1.00	1.00	1.00	22.00

- Normal
- Deviations
- Alarming
- High Errors

## Overall statistics for static parameter (Footprint-wise)

	Inner Beam (HH)				Outer Beam (VV)				Parameter Specifications		
	Min	Max	Mean	Bad Occ. (%)	Min	Max	Mean	Bad Occ. (%)	Parameter	Min	Max
<b>Incidence Angle (deg)</b>	48.63	49.48	49.07	0.000	57.37	58.28	57.96	0.000	Inci.(Inner)	47.10	49.90
<b>Azimuth Diff. (deg)</b>	0.0027	6.75	1.27	2.726	0.0000	297.46	1.27	4.141	Inci.(Outer)	57.30	58.90
<b>Range(Km)</b>	1030.48	1085.43	1052.69	0.000	1207.66	1275.48	1233.74	4.007	Azimuth Diff.	0.60	2.00
<b>X Factor(dbm)</b>	-91.42	-89.64	-90.25	0.000	-93.36	-91.68	-92.10	0.000	Range(Inner)	1025.00	1095.70
<b>Across Distance (Km)</b>	15.40	15.94	15.60	0.000	10.06	53.00	20.90	8.000	Range(Outer)	1210.00	1280.00
<b>Along Distance (Km)</b>	18.65	6691.36	204.34	30.000	18.30	6577.90	100.58	14.000	X-Factor	-100.00	-80.00
									Ac.Distance(Inner)	15.00	20.00
									Ac.Distance(Outer)	15.00	22.00
									Al.Distance(Inner)	15.00	30.00
									Al.Distance(Outer)	10.00	30.00

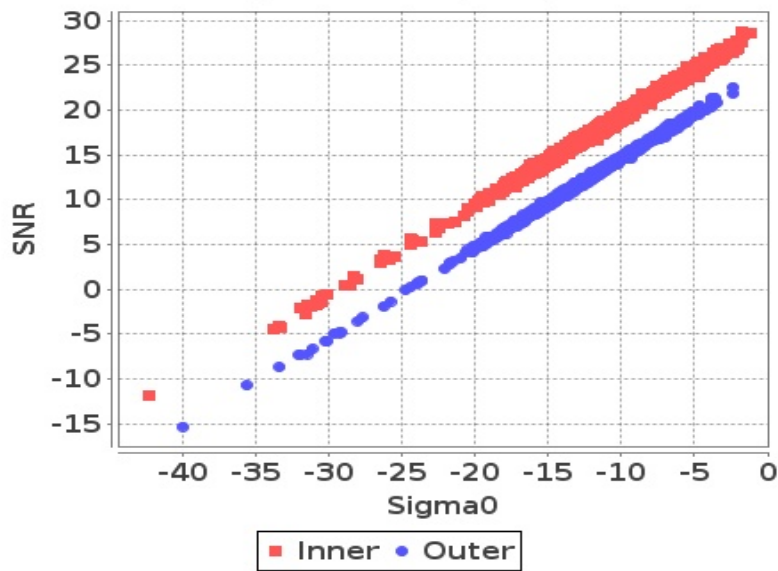
- Normal
- Deviations
- Alarming
- High Errors



## Sigma0 Behaviour (Sigma0 Vs SNR)

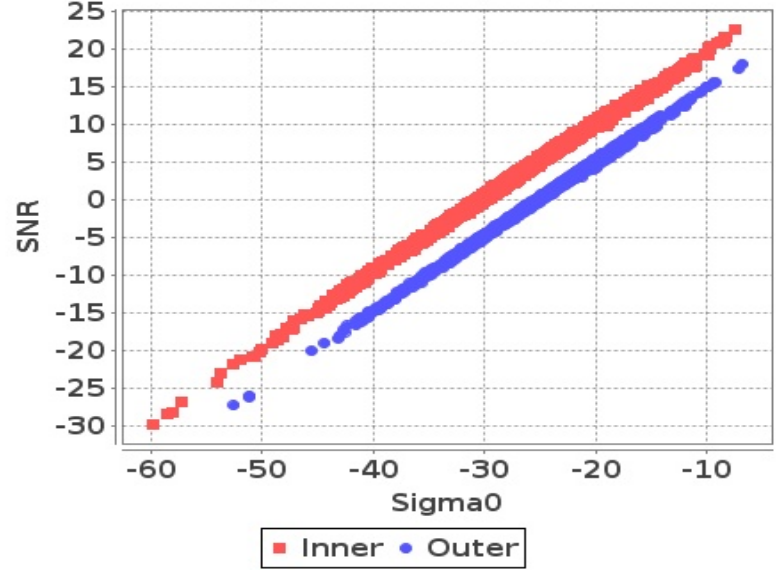
Footprint-Land

Sigma0 Vs SNR (Land)



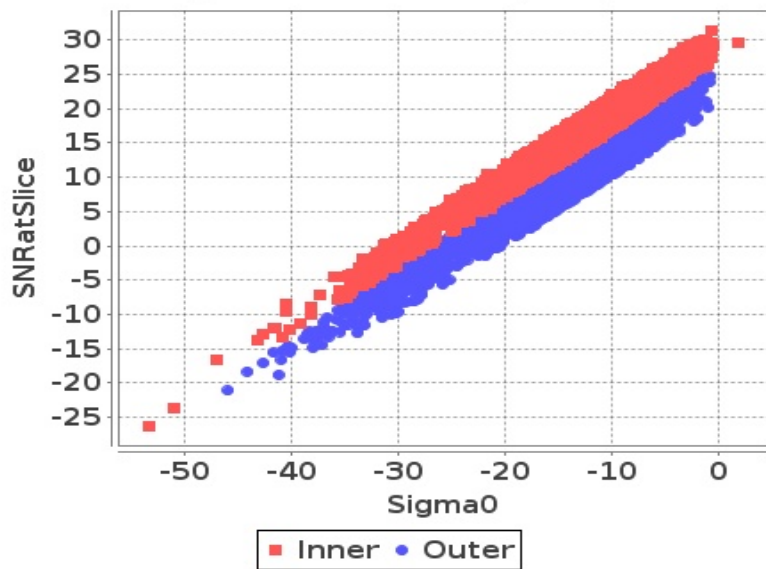
Footprint-Sea

Sigma0 Vs SNR (Sea)



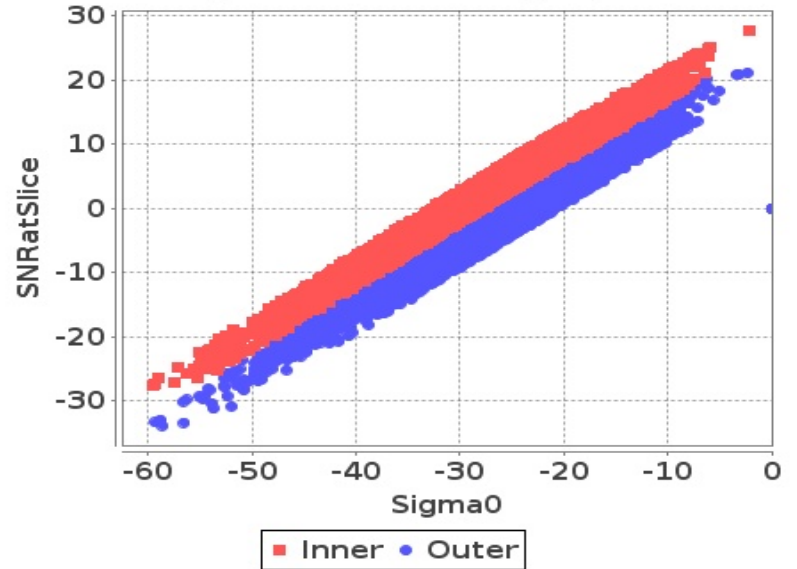
Slice-Land

Sigma0 Vs SNRatSlice (Land)



Slice-Sea

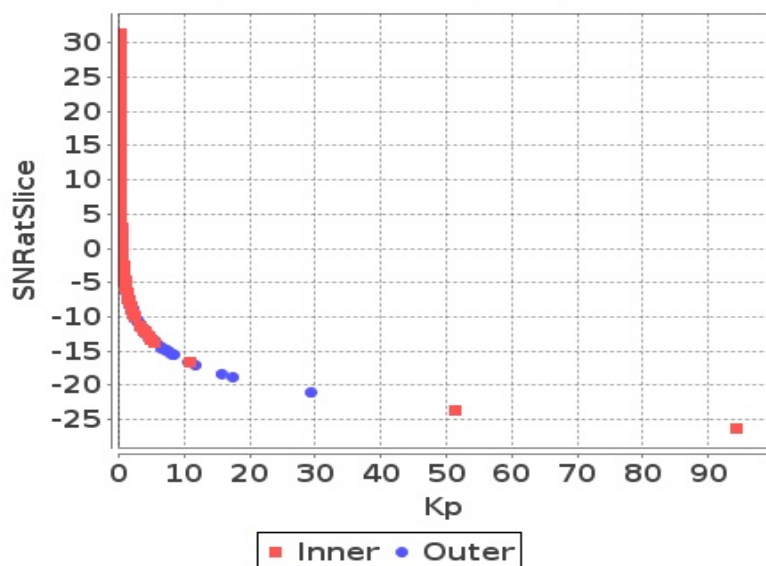
Sigma0 Vs SNRatSlice (Sea)



## Sigma0 Behaviour (Kp Vs SNR)

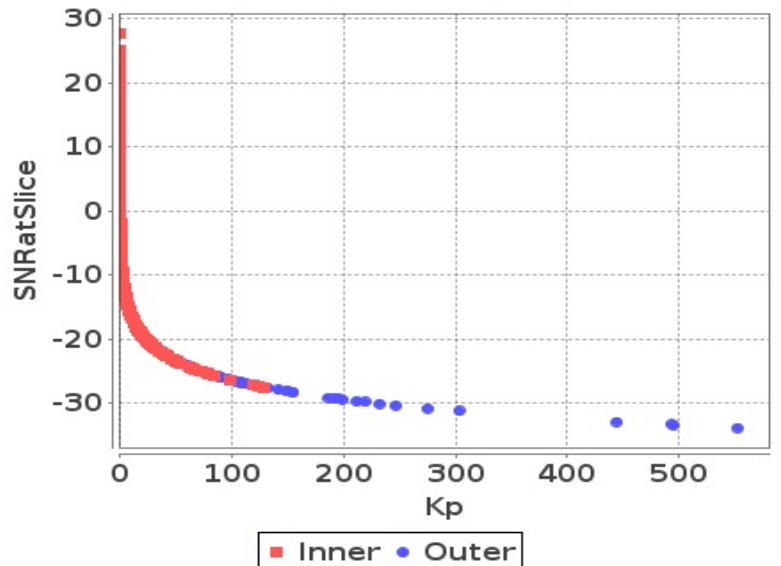
Slice

Kp Vs SNRatSlice (Land)



Slice

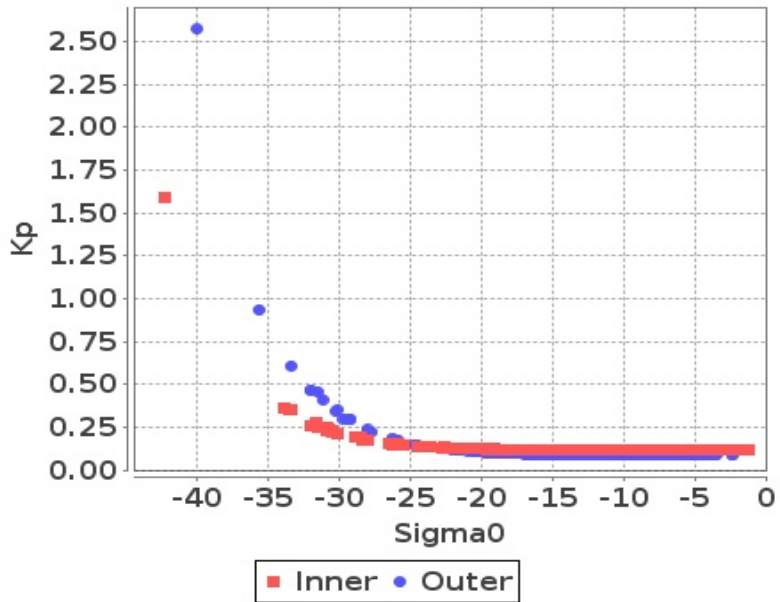
Kp Vs SNRatSlice (Sea)



# Sigma0 Behaviour(Sigma0 Vs Kp)

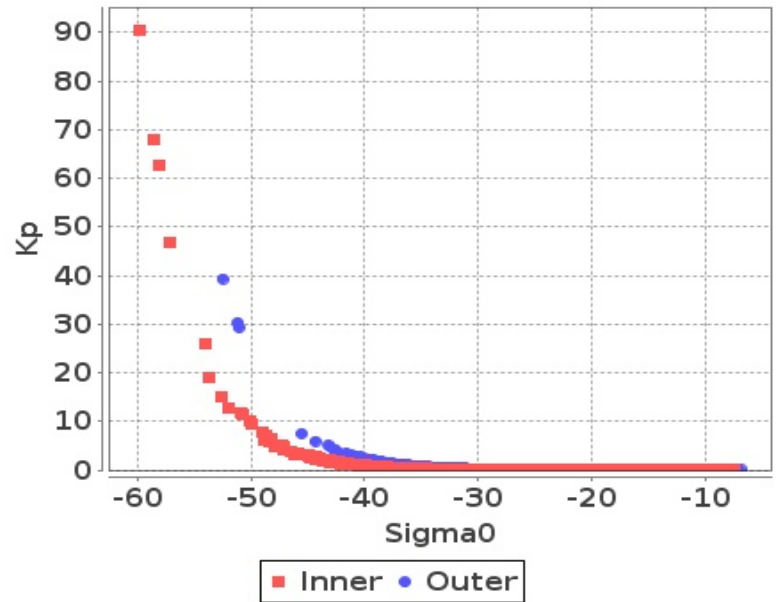
## Footprint-Land

### Sigma0 Vs Kp (Land)



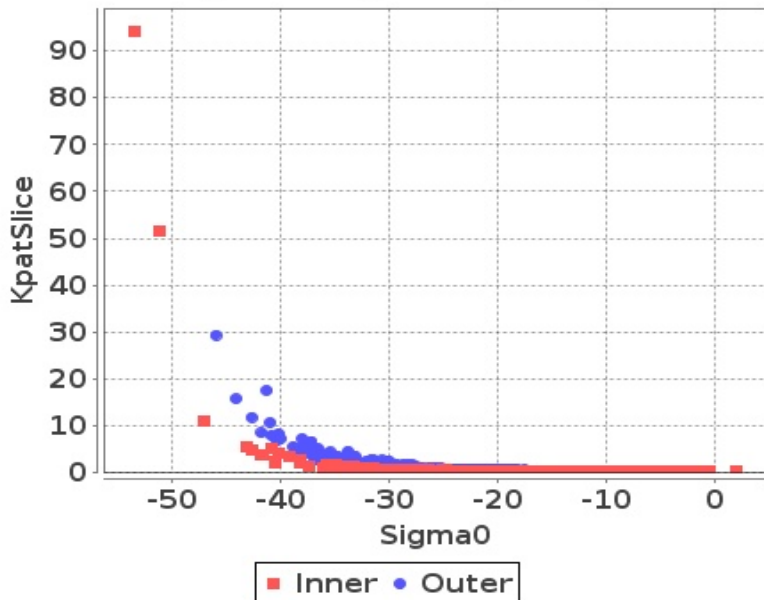
## Footprint-Sea

### Sigma0 Vs Kp (Sea)



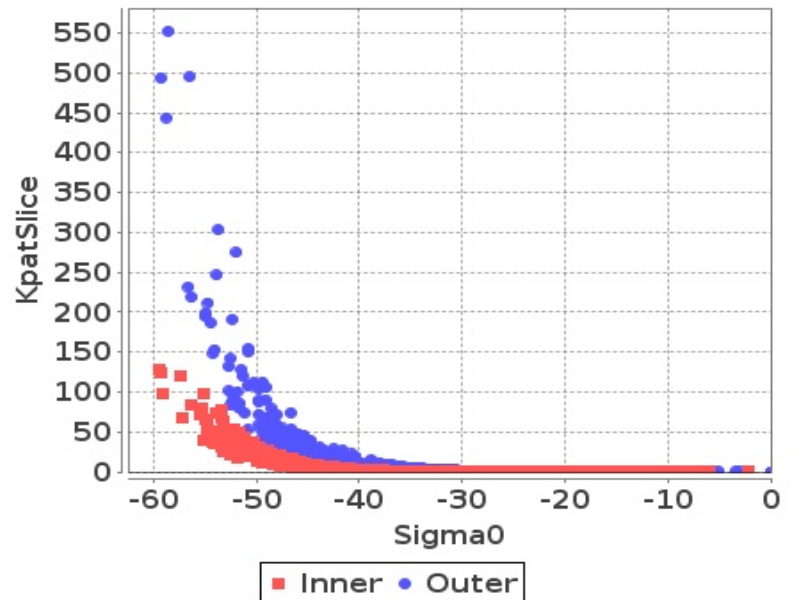
## Slice-Land

### Sigma0 Vs KpatSlice (Land)



## Slice-Sea

### Sigma0 Vs KpatSlice (Sea)

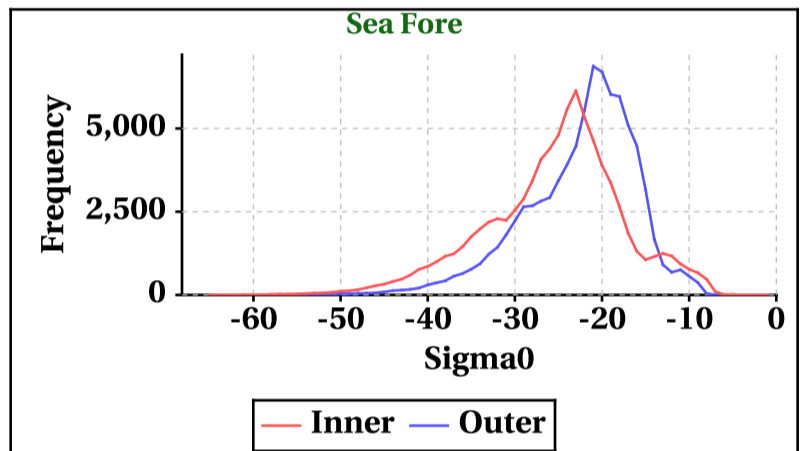
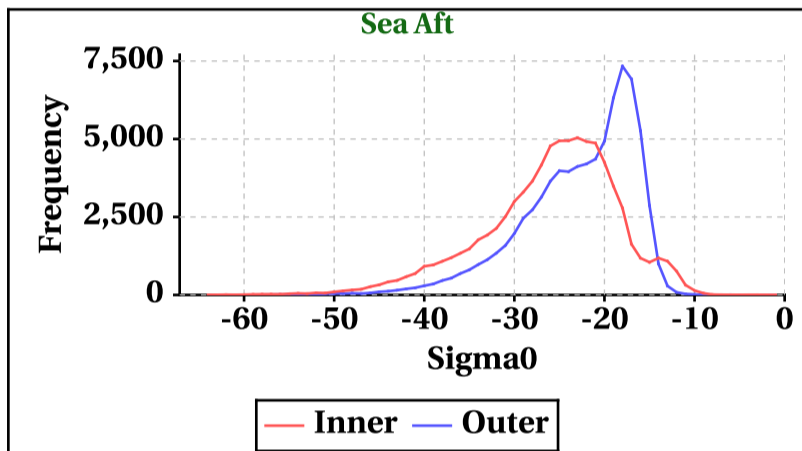
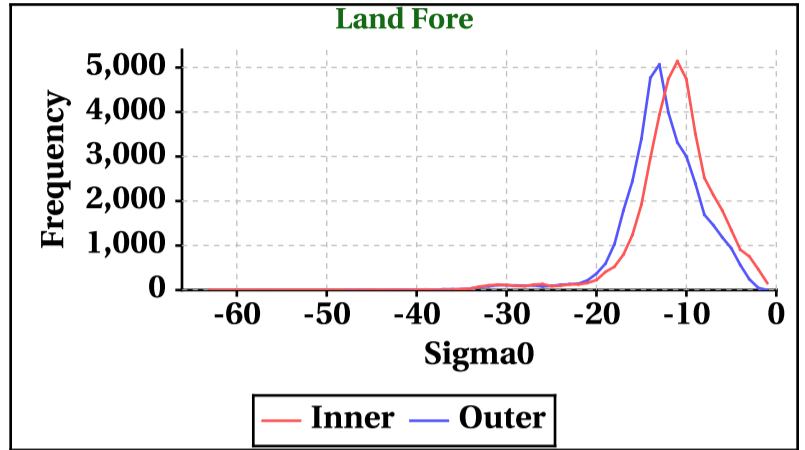
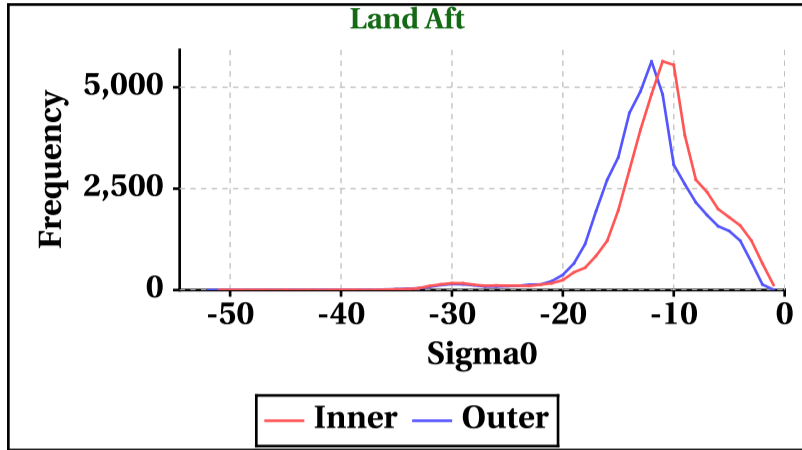


# Dynamic Range (Data Histograms)

## Sigma0(db)

Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-51	-63	-64	-65
Max	0	0	0	0

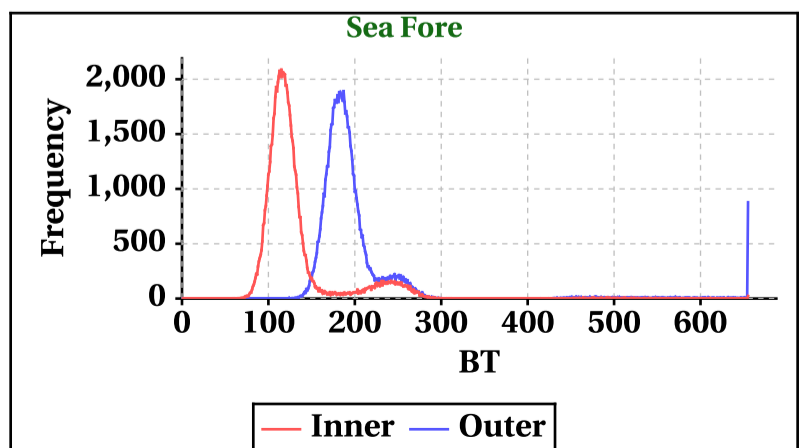
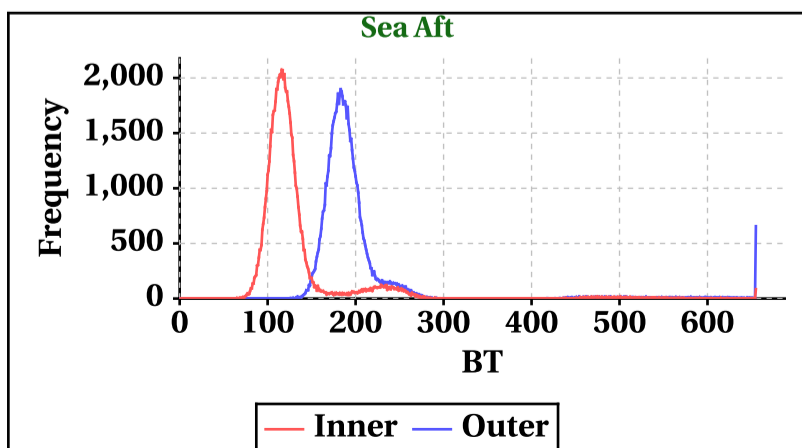
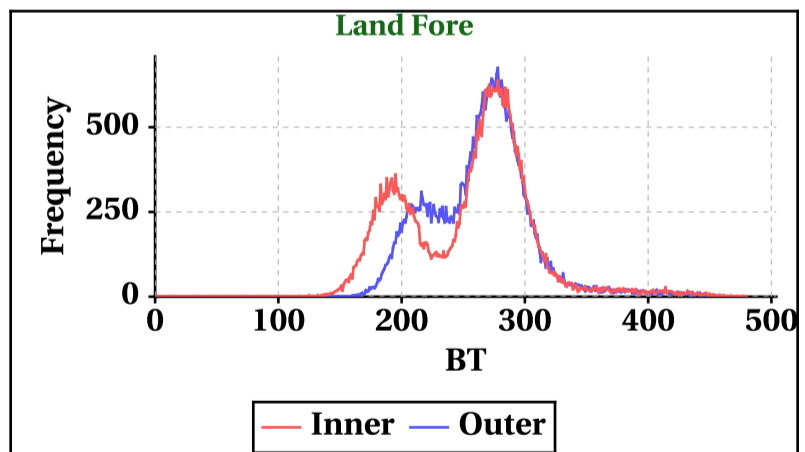
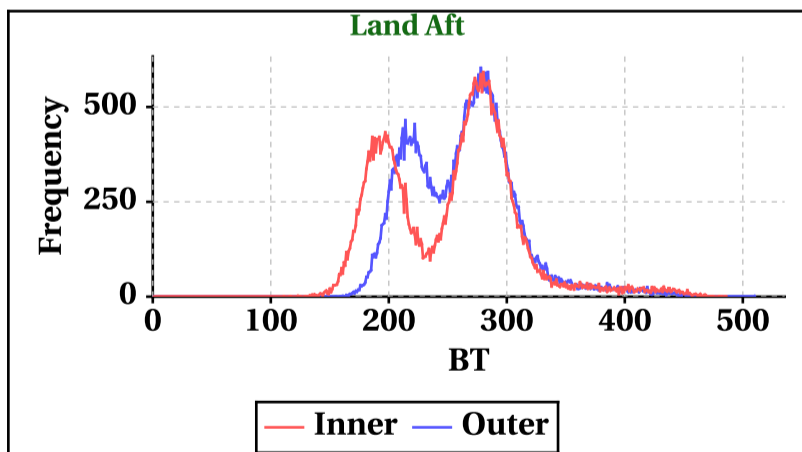
Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-52	-48	-59	-60
Max	0	0	0	0



## Brightness Temperature(K)

Inner Beam(HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	486	480	655	655

Outer Beam(VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	0	0	0	0
Max	510	478	655	655

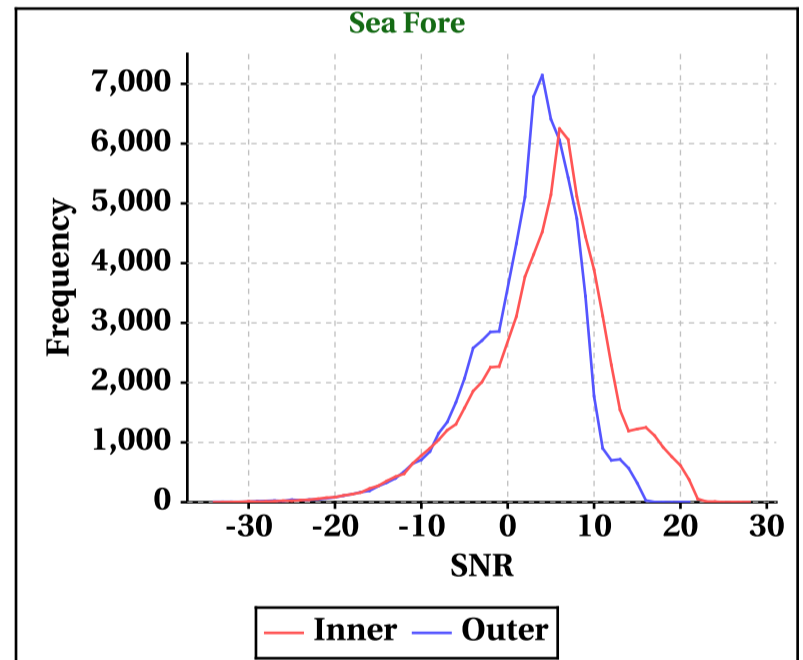
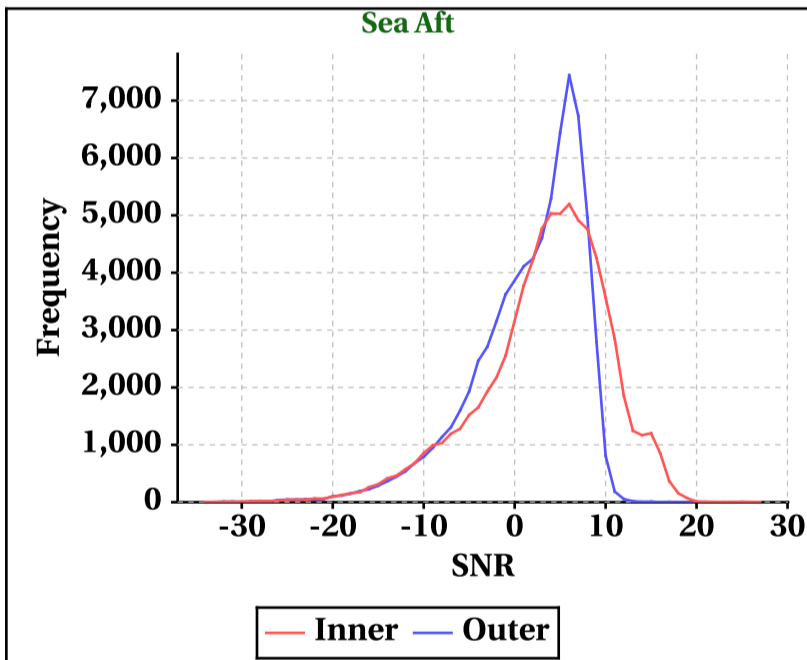
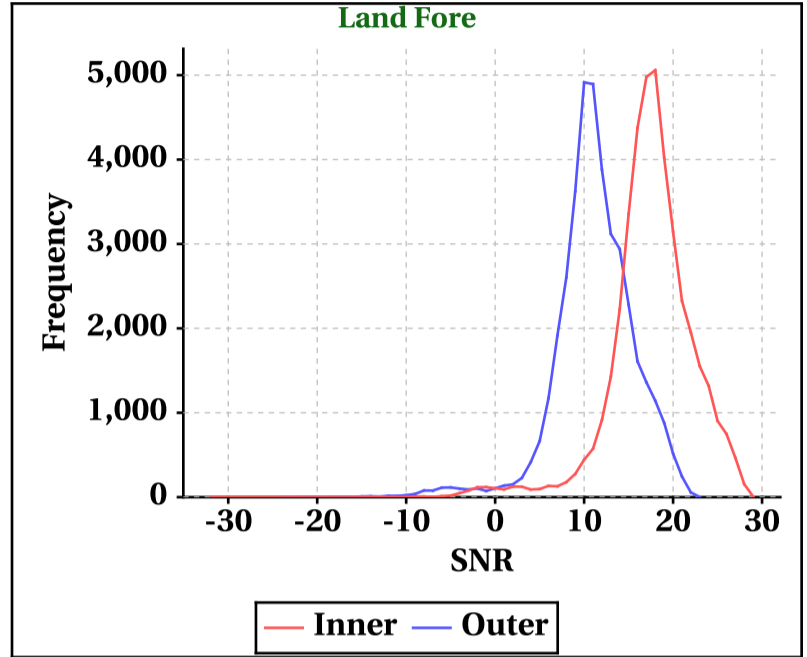
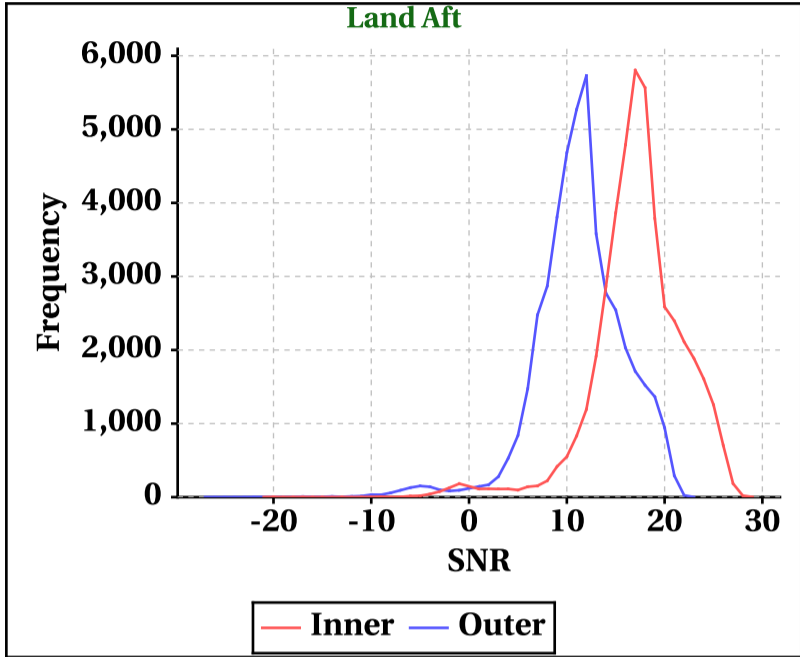


# Dynamic Range (Data Histograms)

## SNR(dBm)

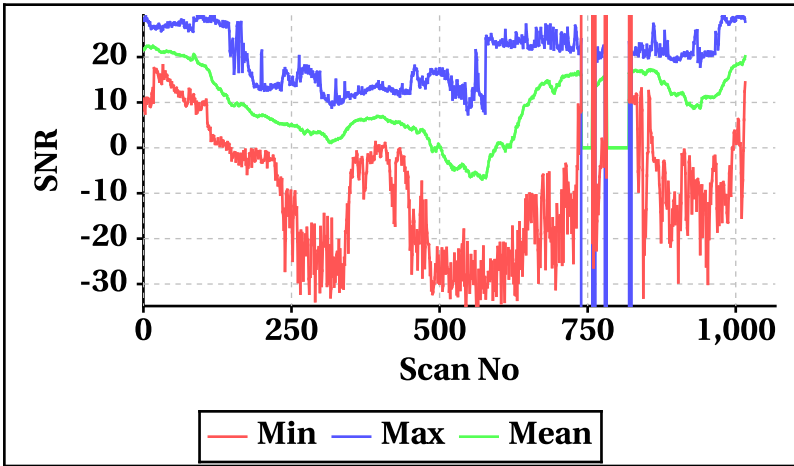
Inner Beam (HH)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-21	-32	-34	-34
Max	29	29	27	28

Outer Beam (VV)				
	Land Aft	Land Fore	Sea Aft	Sea Fore
Min	-27	-24	-34	-34
Max	23	23	21	21

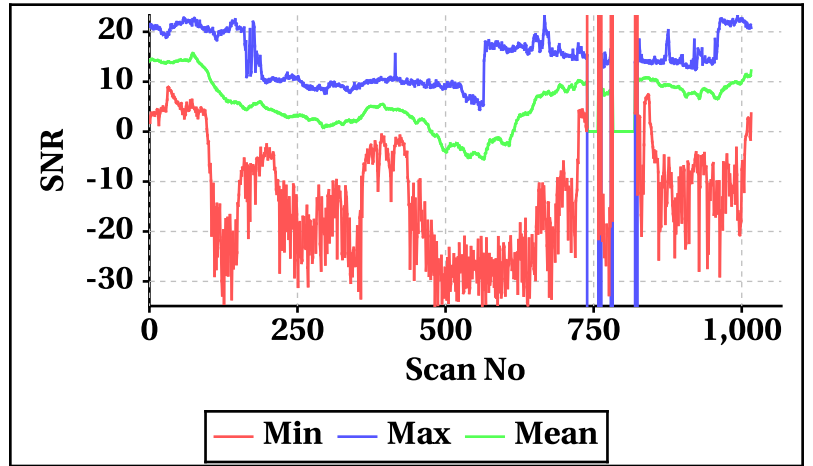


## Orbit-wise behaviour of SNR

Inner Beam (HH)

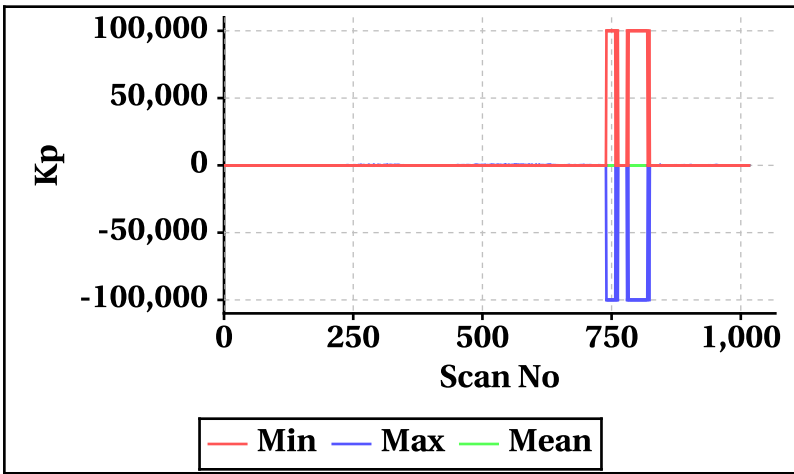


Outer Beam(VV)

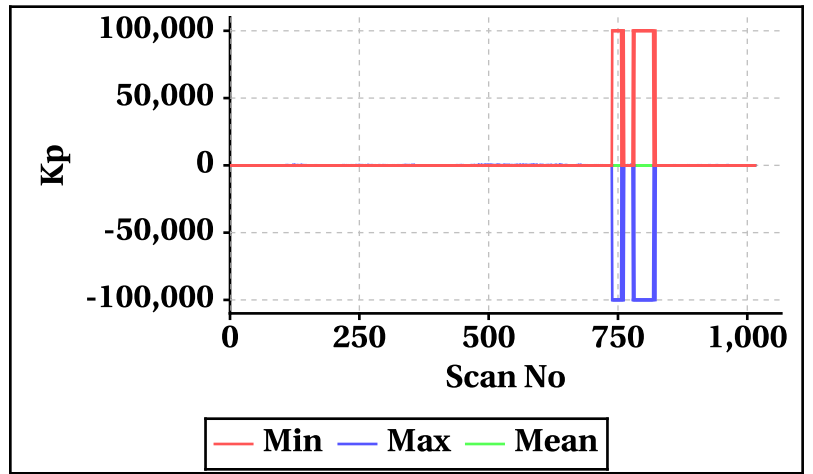


## Orbit-wise behaviour of Kp,Kpa,Kpb,Kpc

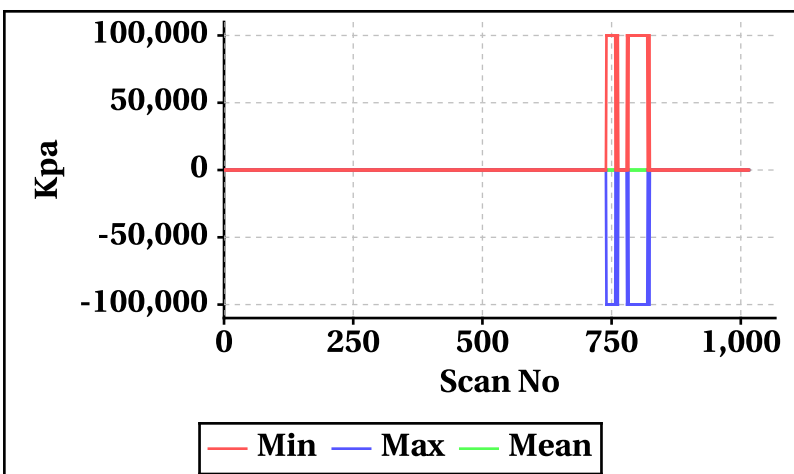
Inner Beam(HH)



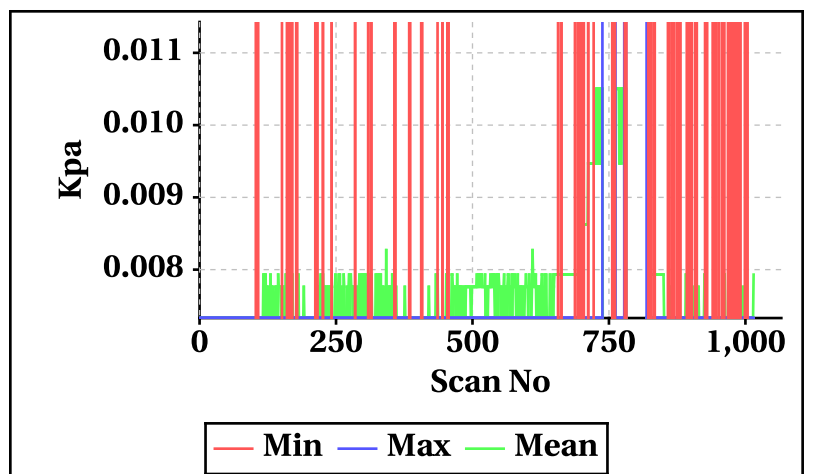
Outer Beam(VV)



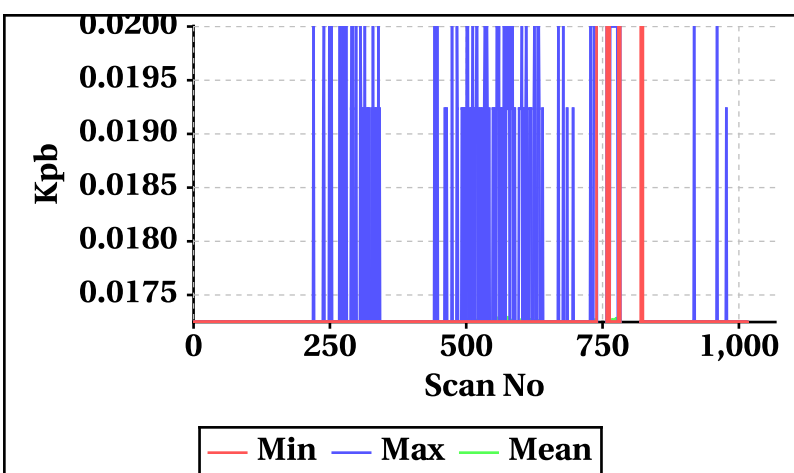
Inner Beam(HH)



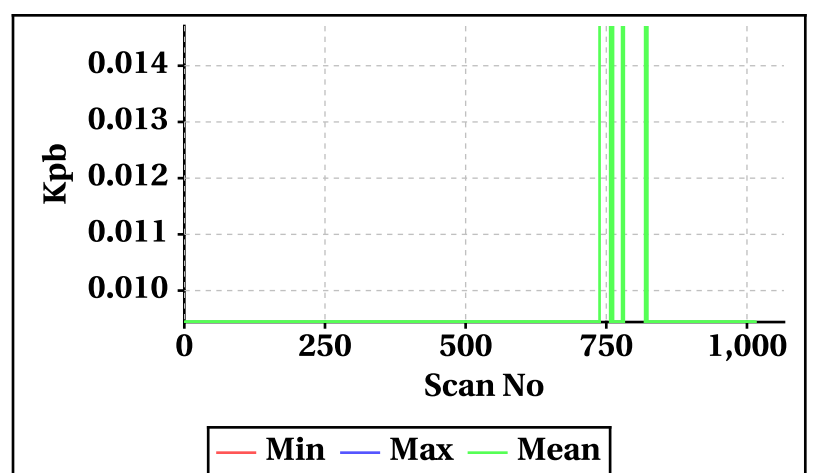
Outer Beam(VV)



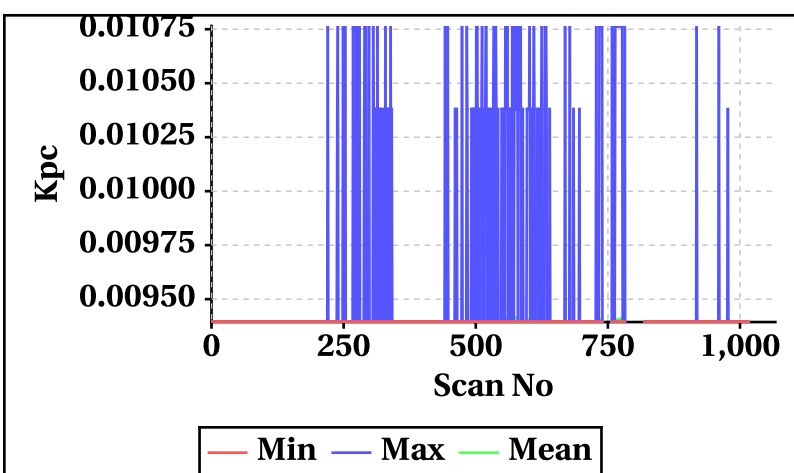
Inner Beam(HH)



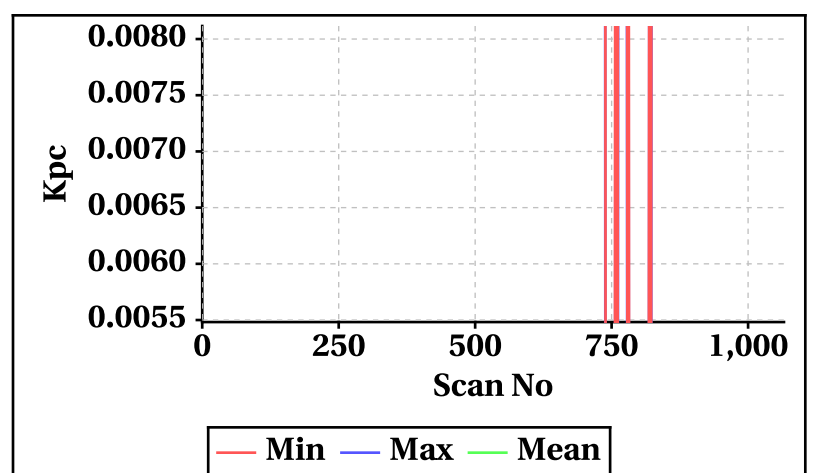
Outer Beam(VV)



Inner Beam(HH)



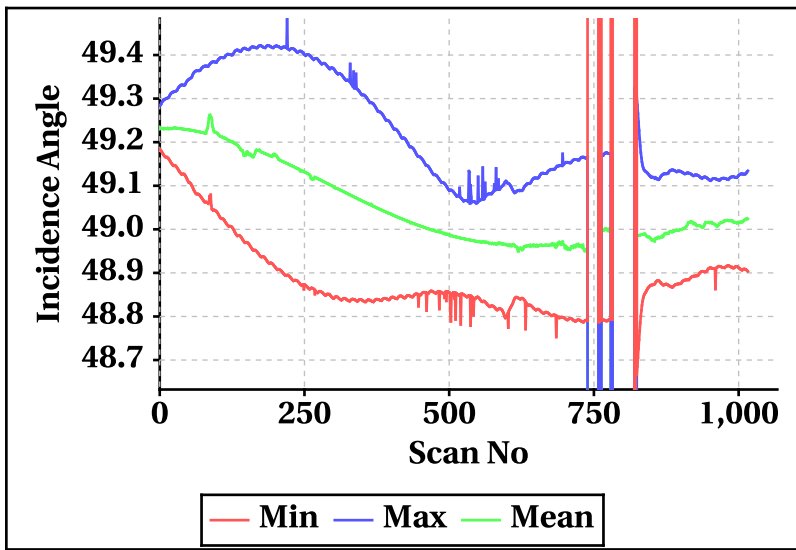
Outer Beam(VV)



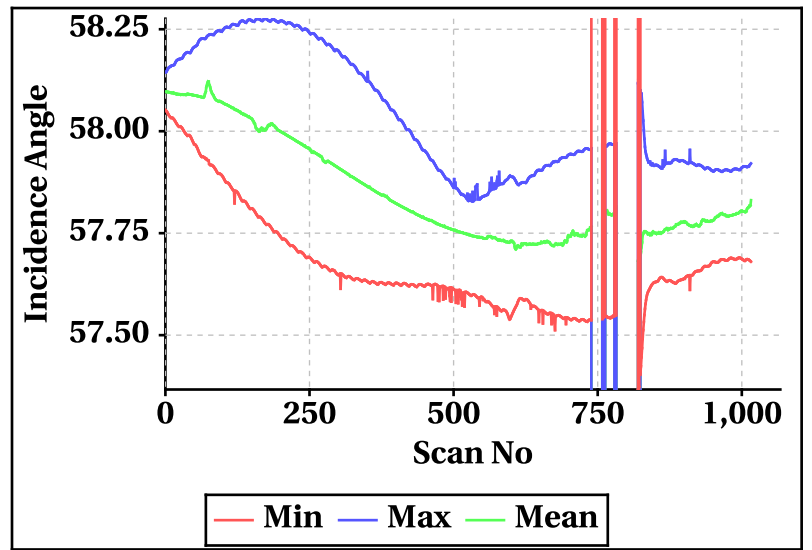


# Orbit-wise behaviour of Incidence, Azimuth, Range, X-Factor

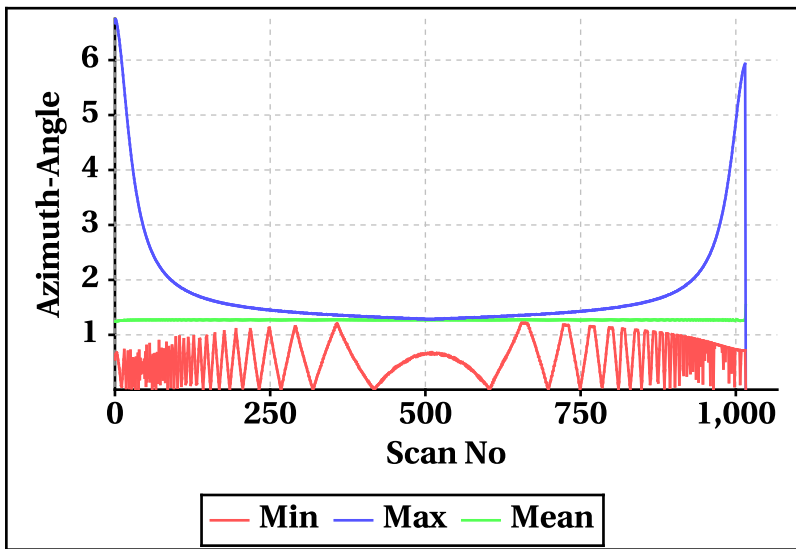
**Inner Beam (HH)**



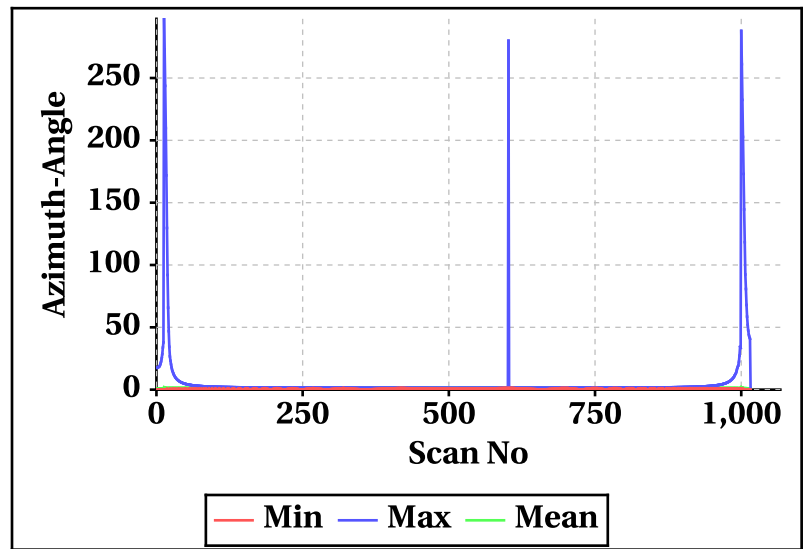
**Outer Beam(VV)**



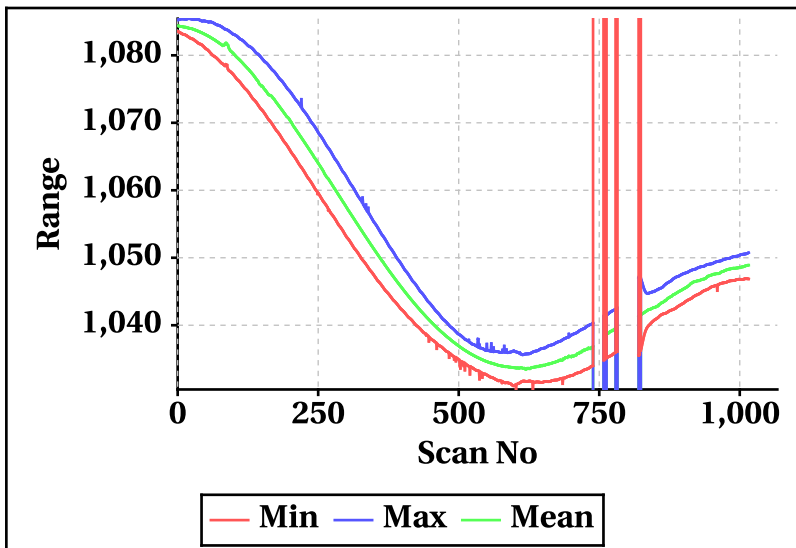
**Inner Beam (HH)**



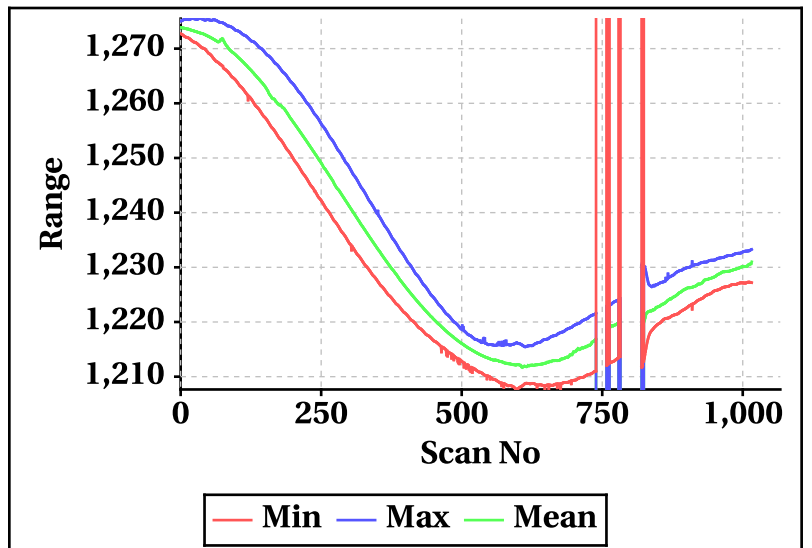
**Outer Beam(VV)**



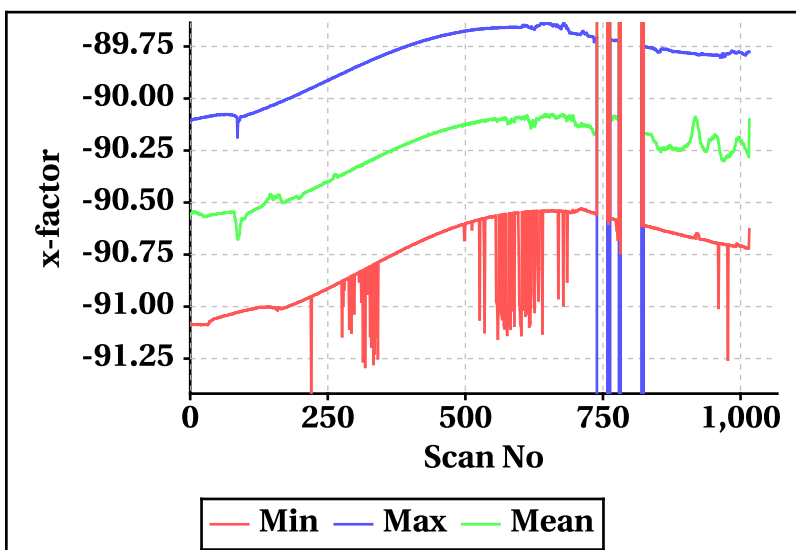
**Inner Beam (HH)**



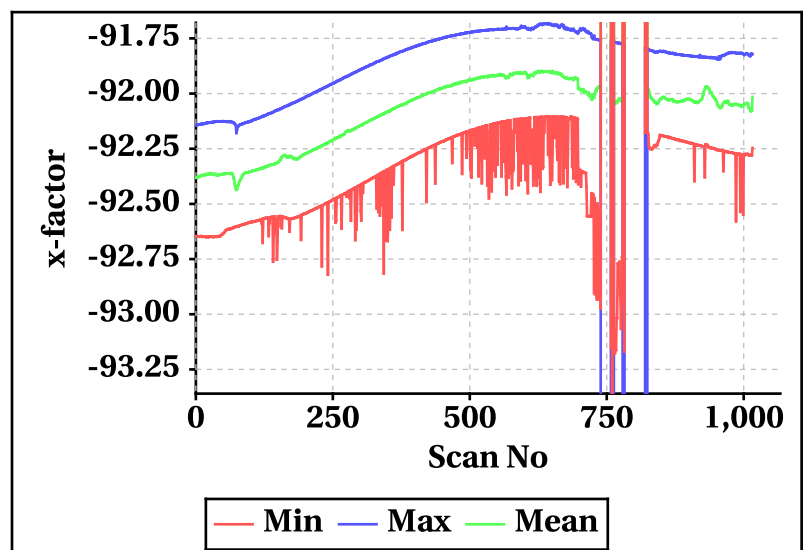
**Outer Beam(VV)**



**Inner Beam (HH)**



**Outer Beam(VV)**

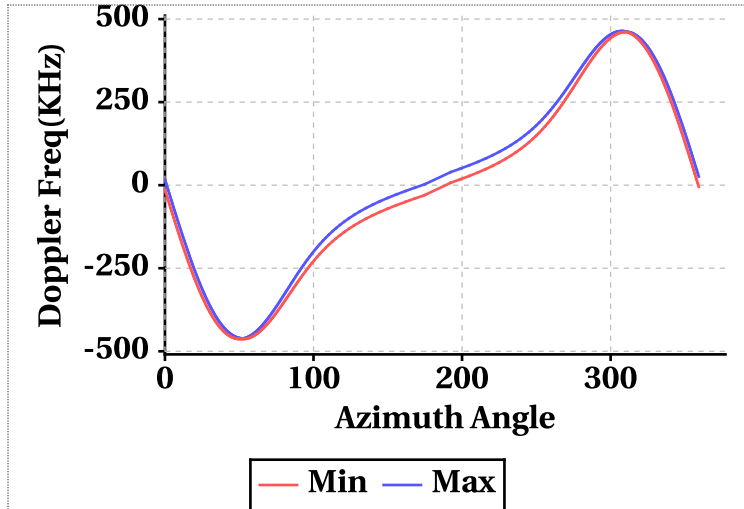


# Doppler Frequency Variation

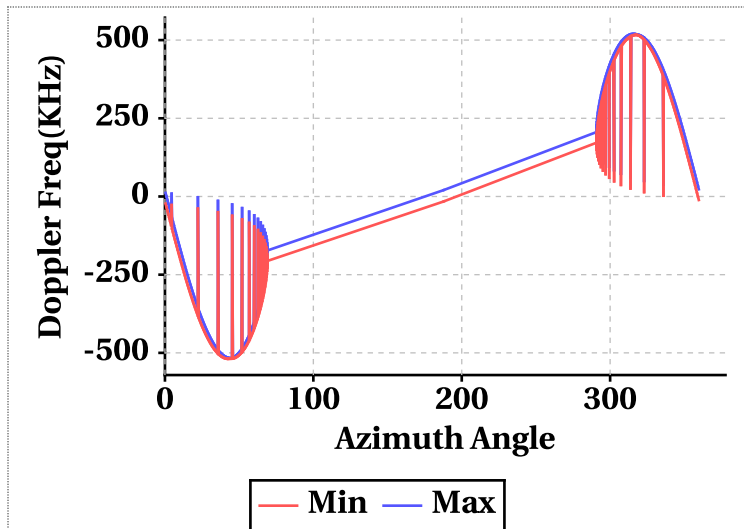
**Doppler Frequency(KHz) variation statistics Over the half Orbit**

	Inner Beam (HH)	Outer Beam (VV)
<b>Min</b>	-463.00	-518.98
<b>Max</b>	463.94	519.80

**Footprint wise Doppler frequency variation Inner Beam (HH)**



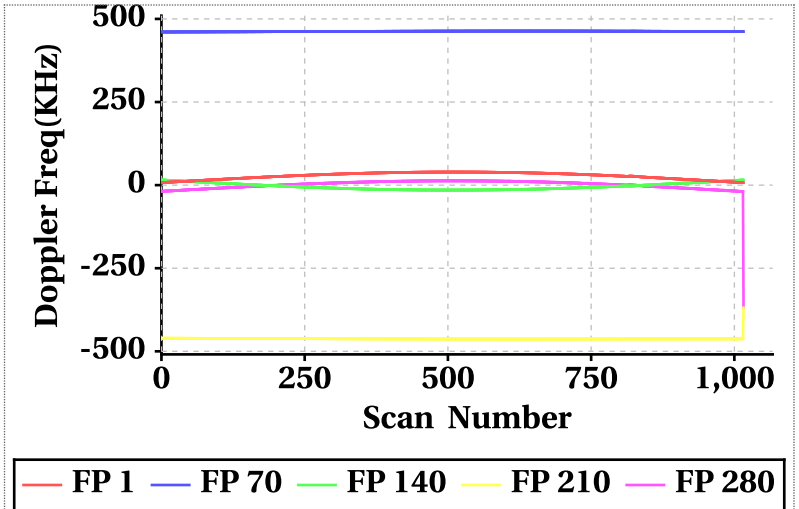
**Footprint wise Doppler frequency variation Outer Beam (VV)**



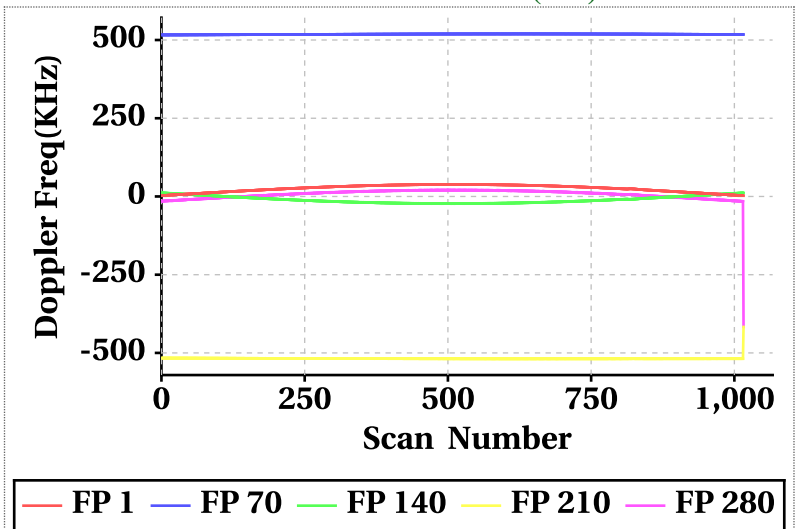
**Doppler Frequency(KHz) variation**

Doppler_FP	Inner Beam (HH)			Outer Beam (VV)		
	Min	Max	Mean	Min	Max	Mean
Doppler_1	7.18	39.34	27.74	2.50	38.34	25.40
Doppler_70	460.76	463.50	462.52	516.28	519.54	518.42
Doppler_140	-15.02	15.56	-3.91	-22.82	11.64	-10.29
Doppler_210	-462.92	-369.00	-462.20	-518.78	-416.96	-518.04
Doppler_280	-369.00	13.06	0.97	-416.96	20.42	6.90

**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Inner Beam (HH)**

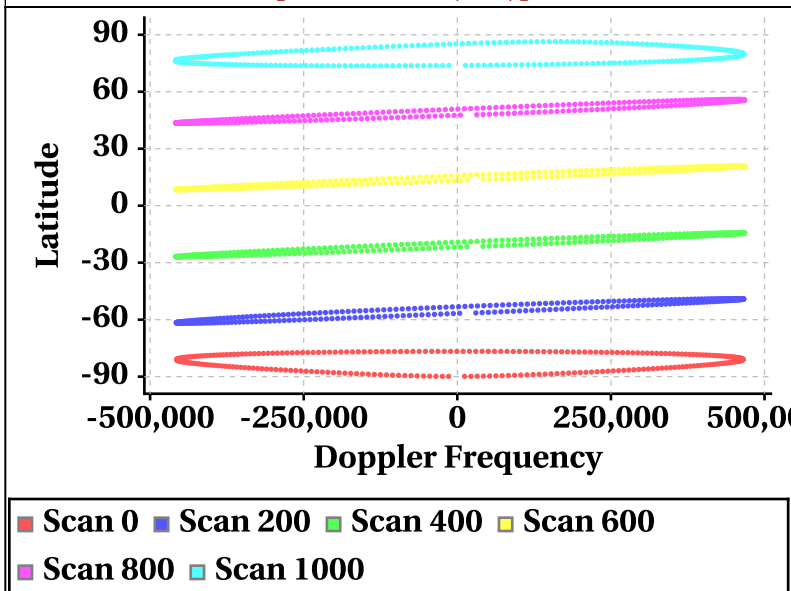


**Doppler frequency variation at footprints: 1, 70, 140, 210 & 280 Outer Beam (VV)**

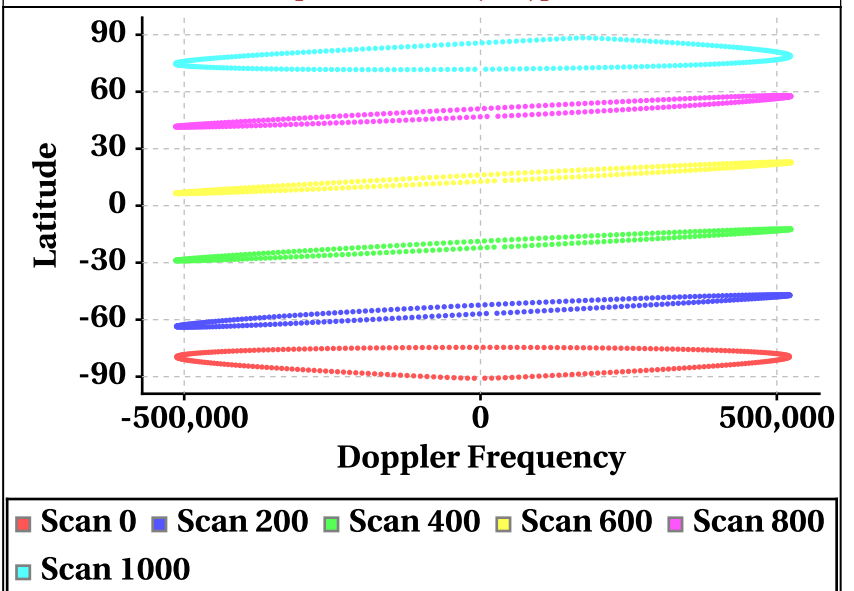


# Latitude Vs Doppler Frequency

**Doppler Frequency at Scan Interval of 200 [Inner Beam(HH)]**



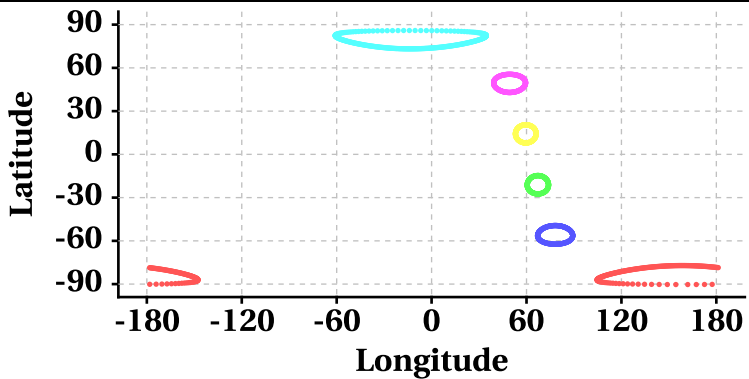
**Doppler Frequency at Scan Interval of 200 [Outer Beam(VV)]**



# Parameter as a function of Latitude

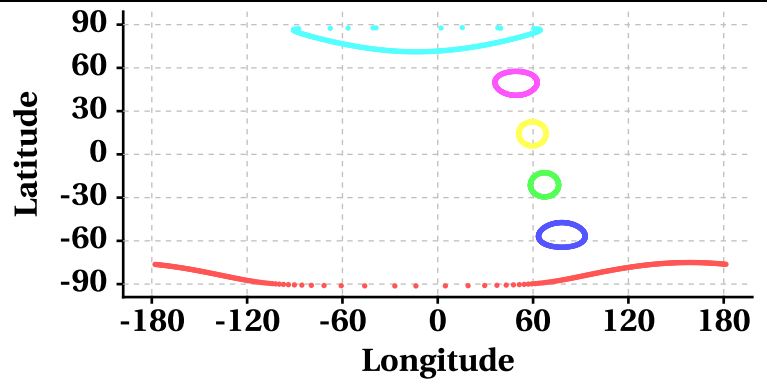
## Latitude Vs Longitude

Scan Trace [Inner Beam(HH)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800 Scan 1000

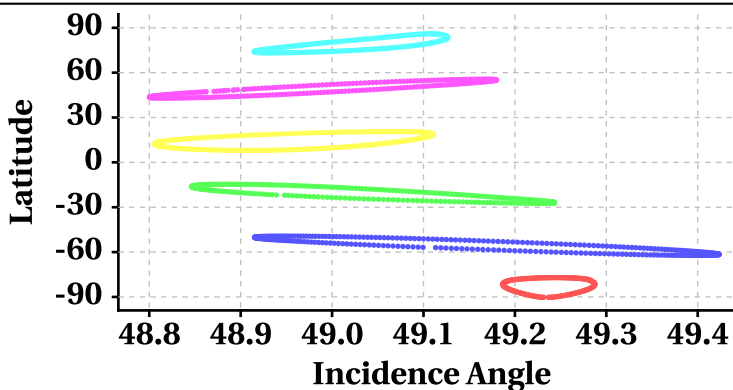
Scan Trace [Outer Beam (VV)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800 Scan 1000

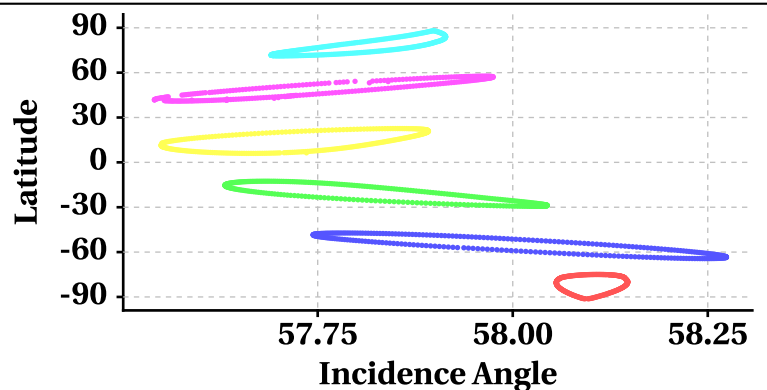
## Latitude Vs Incidence Angle

Incidence Angle at Scan Interval of 200 [Inner Beam(HH)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800 Scan 1000

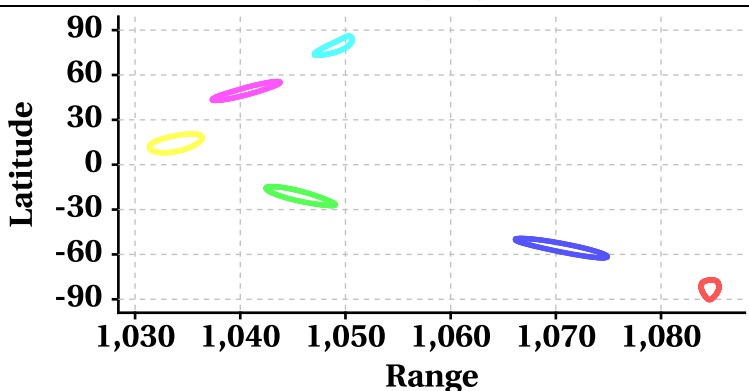
Incidence Angle at Scan Interval of 200 [Outer Beam (VV)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800 Scan 1000

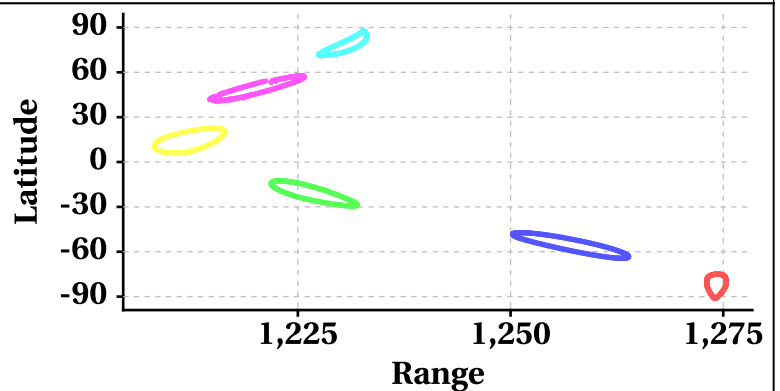
## Latitude Vs Range

Range at Scan Interval of 200 [Inner Beam(HH)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800 Scan 1000

Range at Scan Interval of 200 [Outer Beam(VV)]



Scan 0 Scan 200 Scan 400 Scan 600  
Scan 800 Scan 1000



# Variation in Orbit and Attitude Parameters

